DOCUMENT RESUME

ED 375 443 CS 508 715

AUTHOR Abu Hassan, Musa
TITLE Media Selection for Agricultural Knowledge Transfer: The Malaysian Experience.
PUB DATE Aug 94
NOTE 25p.; Paper presented at the Annual Meeting of the Association for Education in Journalism and Mass Communication (77th, Atlanta, GA, August 10-13, 1994).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Adult Farmer Education; Audience Awareness; *Development Communication; Educational Media; Extension Agents; Foreign Countries; Information Transfer; Mass Media; Media Research; *Media Selection; Rural Education; Surveys
IDENTIFIERS *Malaysia

ABSTRACT

A study examined the ways in which the staffs of communication units in agricultural extension agencies in Malaysia select media to transfer knowledge to their clients. A survey method of data collection was employed, whereby 95 staff of communication units from 11 development agencies were asked to respond to self-administered questionnaires. Mostly closed-ended questions and ratings of items for frequency and applicability on a scale of 1 to 7 were employed. Results indicated that: (1) respondents regarded actual objects as best in knowledge transfer activities, followed by media that conveyed reality with a high degree of fidelity; (2) the media for instruction were considered somewhat different from media for campaigns; and (3) audience characteristics, purpose of communication, audience media preference, and time given to complete the media were the selection elements (in descending order) considered important in the media selection process. (Contains 22 references and three tables of data.) (Author/RS)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 375 443

Media Selection for Agricultural Knowledge Transfer: The Malaysian Experience

Musa Abu Hassan, Ph. D

Department of Development Communication
Agriculture University of Malaysia
Serdang, Selangor, MALAYSIA.

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

M. Abu Hassan

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

CS 508 715

Paper presented at the International Division, 1994 AEJMC Annual Convention, Atlanta, Georgia, U.S.A.

BEST COPY AVAILABLE

Media Selection for Agricultural Knowledge Transfer: The Malaysian Experience

Musa Abu Hassan, Ph. D

Abstract

This study examines the ways in which staff of communication units in agricultural extension agencies in Malaysia select media to transfer knowledge to their clients. A survey method of data collection was employed, whereby 95 staff of communication units from 11 development agencies were asked to respond to self-administered questionnaire. Mostly closed-ended questions and ratings of items for frequency and applicability on a scale of 1 to 7 were employed.

The findings of this study revealed that the respondents regard actual objects are best in knowledge transfer activities, followed by media that convey reality with a high degree of fidelity. The respondents also indicated that media for instruction are somewhat different from media for campaigns. With regard to the selection elements considered important in media selection process, they choose audience characteristics, followed in order by purpose of communication, audience media preference and time given to complete the media.

Media Selection for Agricultural Knowledge Transfer:

The Malaysian Experience

Musa Abu Hassan, Ph. D
Agriculture University of Malaysia

It is believed, and has been shown, that communication media can greatly facilitate the delivery of knowledge from source to receiver. Given the rapid accumulation of agricultural knowledge—research findings and agricultural technology developed by agricultural research institutions—getting the right media for timely dissemination of that knowledge in a form useful to the farmers and other users becomes a challenge.

One of the ways to help rectify knowledge transfer problems is through the use of communication media. Nevertheless, due to mixed outcomes regarding the apparent effectiveness of mass media for encouraging development (for example see Beltran, 1974; Kearl, 1978; Hornik, 1988, Mayo, 1989), other communication media have arisen on the development scene to support the communication process. Small media such as flipcharts, photographs and brochures, in particular, have gained popularity and have proven to be effective in development work.

Schramm's (1977) notion that "students can learn effectively from the media, from any medium" (p. 14) needs to be qualified because it is impossible for an illiterate person to learn effectively from printed materials, or for certain skills to be learned by reading without visual guides. Moreover, Academy for Educational Development (AED) 1985 noted that there are "strengths and weaknesses of specific media and an almost universal recognition that a single medium alone accomplishes much less than several media in combination" (p. 6).

Thus, in light of the current advancements in communication technology whereby the choice of communication media is greater than ever, it is inevitable that

proper media planning and selection are needed in order to develop a single medium or combination of media that will meet specific conditions and requirements.

In order to gain better understanding on how development agencies select communication media to transfer agricultural knowledge to their target audiences, a study among Malaysian agricultural extension agencies was conducted. Basically, this study considers knowledge transfer to be more than a communication process of transmitting knowledge from the source to potential users. It involves making sure that the users utilize the knowledge they receive in a way suitable for them. Thus, study considers instruction and information dissemination through campaigns as two major methods of transferring knowledge from the source to the receivers.

To better present this study and its findings, this paper is divided into four sections. The first section gives a brief review about communication media selection. Then section two outlines the purpose and methodology of the study. Section three presents the findings of the study and finally, section four ends the paper with some discussions.

Communication Media Selection - What and Why?

Schramm (1977), states that it is important to understand media selection because it affects the efficiency of communication. According to him, media selection is a rational act, as the decision maker has to consider a host of information related to media, message, learners, cost, and so on. On the other hand, Pounds's (1985) justification of media selection is derived from research which indicates that people use different sources depending on the kind of information they are seeking. She also states that "knowing where people look for information is only half the battle for an extension communicator. Knowing where people find information is the other half" (p. 20).

Kemp and Smellie (1989) refer to media selection as a means "to choose the one material which best fills your needs" (p. 312). They also propose that selection be

done after reviewing a number of media. According to Kemp and Smellie, among the factors that need to be considered as selection criteria are learners, purpose or objective, content, media type, active learning, technical quality, cost, and validation.

Media selection in the field of communication is mostly related to communication or information campaigns, and few, if any, formal models have been proposed. Instead, a number of guidelines for media selection have been proposed by several scholars (for examples, see Schramm (1977), Adhikarya and Middleton (1979), Adhikarya and Posamentier (1987), Rogers and Storey (1987), and Mody (1991)).

The need to select media for instruction has long been recognized by scholars in education. There has been a number of media selection models developed by scholars such as Anderson (1983), Reiser and Gagné (1983), Romiszowski (1988), and Reynolds and Anderson (1992). As an example, according to Gagné and Briggs (1979), there are six factors that need to be considered in media selection: 1) task variables—the type of performance expected of learners as a result of instruction; 2) learner variables—the characteristics of the learners that can be matched to specific features of instruction and media as different learners have different learning styles; 3) the assumed learning environment—the practicality of media use as it relates to size of class, capability of developing new materials, availability of media equipment, etc.; 4) the assumed development environment—the time, budget, and personnel available that could ensure the success of designing the specified delivery system; 5) the economy and the culture—to ensure that the chosen media would be acceptable and practical to the users, and are within the budget and technology of the agency; and 6) the practical factors—considerations that need to be reviewed with regard to use, audience, location of use, production and so on.

The concern for systematic media selection for agricultural development had been felt in the late 70's as Kearl (1978) writes that "today two important new questions have emerged. Although not yet the focus of much research, they are at

least beginning to be asked: 1) What channels of communication, administrative or otherwise, will best integrate the contributions of diverse public and private agencies in meeting agricultural development needs? 2) What communication channels and devices will help rural people clarify their alternatives, organize their resources, and make those outside the community aware of their needs?" (p. 180). More recently, Rosser (1987) states that,

> It is the responsibility of the communication-research unit to ensure that the information being disseminated through the different media is being readily received and understood by the farming community. All audio-visual teaching and extension aids have to be pre-tested, and re-tested after revision where required. Technical terms have to be translated and simplified into the vernacular languages with extensive use of farming idiom and colloquial expression. Any implements, utensils or materials illustrated need to be in common usage, or of common knowledge, and be instantly recognizable. Special audio and audio-visual programmes have to be presented in an acceptable cultural format. (pp. 76-77)

The need to have a systematic media selection procedure is well summarized by Watts and Claar (1983). They state that "debates of the past about which channels—mass or interpersonal—are 'best over-all' become increasingly empty as media develop, as changes occur in audiences and their access to media, as research reveals more about the complexity and richness of human communication, and as planners of education and communication became more adept" (p. 8).

In practice, an effective media selection process is very important in knowledge transfer because it is the basis for successful communication between the originators and the receivers of messages. When appropriate media are selected for a communication process or teaching-learning situation, the likelihood of effective

communication or learning is increased. The need for systematic media selection in the field of agriculture is particularly important because farmers benefit when a variety of media and approaches are used to communicate new knowledge. Acquisition of new knowledge enables farmers to improve farming practices which, in turn, may help them be more efficient and productive and thus improve their lives.

There are at least five ways in which appropriate communication media selection will help in the knowledge transfer process. First, appropriate media improve reach and access. "Reach" means that a larger number of users will know about the knowledge and "access" refers to a situation whereby users can get the knowledge whenever it is required. As a result of better reach and access, knowledge will be more equally distributed among the users. Second, appropriate media facilitate the teaching and learning process. When learners can understand and comprehend knowledge better, it is more likely that the knowledge will eventually be utilized. Third, appropriate media help extension agents perform their tasks more efficiently. It is difficult for extension agents to cope with the development and growth of knowledge from research institutions. Usually the extension agents have to assimilate the knowledge first, before they disseminate it to the farmers. By utilizing appropriate communication media, extension agents can present new knowledge effectively. Also, information can be disseminated more widely and democratically in this manner. Fourth, proper media selection procedure can save time, personnel and cost of media production, In this manner the agency's resources will be better utilized. Fifth, the media serve an additional purpose in that they document media products as well as they keep record of the knowledge that has been transmitted by agencies.

The Media Selection Study in Malaysia

The purpose of this study is to determine how the staff of communication units in the Malaysian agricultural extension agencies select particular communication media to disseminate and teach agricultural knowledge to farmers.

More precisely, the study proposes first to gain a better understanding of how particular communication media are chosen for the knowledge transfer process. Among others, the research focuses on these two key questions:

a. Which communication media do developers consider most appropriate for instruction and for information campaign, and whether they perceived any difference between the media for these two particular purposes?

b. Which selection factors are considered to be important or salient to media developers when they decide on the most appropriate communication media for knowledge transfer and how do they prioritize the selection factors?

In order to answer these questions, a survey research method utilizing self-administered questionnaire was developed to gather data from the respondents. On most the items asked, a scale of one to seven was most often used in soliciting the perceptions and experiences of the respondents. The seven value scale was chosen because Chaffee (1991), referring to Osgood, Suci and Tannenbaum, noted that "reliability improved up to, but not beyond, seven categories" (p. 54).

To promote high reliability, this researcher used a standard instrument with clear, simple, and easy to understand questions. The questions were carefully worded to avoid confusion among the respondents, and precise instructions were included in the research instrument. Likewise, to have proper validity, the research instrument was developed by carefully comparing its content to the underlying theoretical concepts and research questions. The instrument was also developed with reference to instruments of similar research found in the literature. Finally, an expert in the field of study was consulted to review the research instrument.

To ensure that the research instrument has high reliability, the reliability measure Cronbach's Alpha was performed on each question that has a scale from 1 to 7. It was found that the Cronbach's Alpha values on most of the questions were relatively high (ranged from .5939 to .9297). For example, question 8 that asks

respondents to rate the importance of selection elements when choosing media has the Alpha value of .9074, and question 11 that asks respondents to rate their modes of media decision making has the value of .7994.

A total of 108 staff-members involved in media planning and production at the eleven agricultural extension agencies were selected for the study. Since the number is manageable, the researcher decided to take all staff for the study. Of the 108 questionnaires distributed to the staff, 95 were returned (an 88 % response rate). During data collection, the respondents were requested to respond to the questionnaires immediately, if there were no urgent tasks they had to attend to. They were given ample time to complete the questionnaire and the researcher waited at the agency while the respondents answered the questions.

When the respondents completed the task, the researcher gathered the completed questionnaires and checked for any questions that respondents might have left out. In those instances when communication unit staff-members were unavailable or absent, their cooperation in completing the questionnaire at their earliest convenience was requested. In this case, the researcher returned to the agency to collect the completed questionnaires on another appointed date. Attempts to get all distributed questionnaires from the agencies were continued, and completed questionnaires were grouped by agency.

In order to have a better guide in data analysis, the researcher first developed a coding scheme for the research instrument. Then, data from the research instrument were coded and entered into the computer for analysis. The researcher mainly used the Statistical Package for Social Science X (SPSSX) program for data analysis. Generally, statistical procedures that generate descriptive statistics such as percentages, means, and standard deviations were employed in the data analysis, in keeping with the descriptive nature of this study.

To further explain the differences in perception and ratings among the respondents, difference of means T-tests were conducted. Even though it is not a

common practice to conduct tests of significance testing on population data, since there is no sampling error involved, it is permissible to do so. Blalock (1979) explains that "Ordinarily we would not want to stop with a simple description of such a difference, but we would want to provide an explanation" (p. 242). The need to better understand and explain the differences among the respondents and among the agencies urged the researcher to perform such statistical tests. As such, the significance level for the statistical analyses was set at .05.

The Study Findings

To systematically present the research findings, this section has been arranged in four parts. Parts one gives a brief account about the 11 agricultural extension agencies and a general profile of the respondents. Part two and three provide answers to research questions 'a' (media appropriate for instruction and information campaign) and question 'b' (factors considered in media selection process) respectively. Finally, part four concludes the paper.

The Malaysian agriculture extension agencies and respondents of the study. Results of this study found that all 11 agricultural extension agencies were capable and had been producing most kinds of communication media to be used by their extension agents in knowledge or information dissemination activities. The communication units among these agencies were mostly established in the seventies and some of them had undergone reorganization as recent as 1991. All agencies reported having adequate facilities, personnel and budgets for media production. The number of staff within the agencies ranged from 3 to 27.

With regard to the respondents of this study, their ages ranged from 20 to 54 years (mean = 36.93 and std. dev. = 6.54) and their working experience ranged from four months to more than twenty-five years (mean = 8.71 and std. dev. = 6.16). It was also found that their educational level ranged from high school level to Master's

degree. Respondents who hold the title of "Officer" or "Head of Unit" usually have a bachelor's or higher degree. On another level, "Technicians," "Artists," and "Photographers" have a bachelor's degree or lower.

Besides educational qualification, "Officers," "Heads of Unit," and "Assistant Officers" generally possess technical expertise on agricultural subjects. Whereas, "Technicians," "Artists," "Photographers," "Operators," and "Others" can be classified as the group familiar with the production of communication media. Thus, it is clear that the communication units of the Malaysian agriculture extension agencies have a pool of technical expertise and artistic talent. Some balance between subject experts and artists is important for development agencies to transfer knowledge successfully. When working together, a combination of those who know the subject matter and those who know how to present the information or message in a suitable medium for a specific communication situation can be expected to be particularly effective in knowledge transfer activities.

Media appropriate for instruction and information dissemination. Respondents were asked to rate the communication media they considered to be most appropriate for instruction and information dissemination using a scale of 1 (not at all appropriate) to 7 (very/most appropriate). These two uses of communication media (for instruction and information dissemination or campaign) are emphasized in this study because these two purposes of communication media are judged to constitute the main thrust of the knowledge transfer process.

Out of the twenty-nine listed media, this study found that *realia* (the actual object or sample of the real thing, e.g., the actual fertilizer, the actual part of a plant infested by disease or insects, etc.) was considered by forty-six respondents (48.4 %) to be the most appropriate medium for instruction. On the other hand, fifty respondents (52.6 %) considered television to be the most appropriate medium for information dissemination. To better present the media that respondents considered

most appropriate for instruction and information dissemination, the respective means of the media rating are displayed in Table 1.

Table 1. Communication media rated according to their appropriateness for instruction and information dissemination

Type of medium	Mean values (N=95)	
	Instruction	Info. diss.
Realia	6.18 (1)	5.79 (6)
Video	5.98 (2)	5.83 (5)
Slides	5.79 (3)	5.06
Films	5.54 (4)	5.67 (8)
OHP transparencies	5.49 (5)	4.76
Slide-tape series	5.45 (6)	5.18
Television	5.43 (7)	6.35 (1)
Flipcharts	5.31 (8)	4.33
Risalah	5.16 (9)	5.55 (10)
Photographs	5.08 (10)	5.23
Radio	4.63	5.98 (2)
Posters	4.47	5.93 (3)
Newspapers	4.85	5.92 (4)
Exhibitions	4.96	5.77 (7)
Pamphlets	4.76	5.67 (9)

Note: numbers in parentheses denote order of ratings

The list of media considered appropriate for instruction by respondents comprised a mixture of print, electronic, "big," and "small" media. It can be seen that the top ten media considered appropriate for instruction by respondents are mostly

visual media, i.e., media that use or contain pictures and illustrations to convey messages or knowledge. *Risalah* is a kind of publication containing basic and comprehensive information on one or more agricultural techniques, written in semi-technical to popular writing style and intended for farmers.

With regard to communication media regarded as appropriate for information/knowledge dissemination, respondents listed several mass media such as television, radio and newspapers. Other media that received relatively high ratings included video, posters, *realia*, and exhibitions. Results show that the respondents consider the mass media to be most appropriate for information dissemination. As such, these findings are in line with the general practices and perceptions of others involved in communication.

In Table 1 one should also note that the tenth-rated medium for information dissemination has a higher mean than the tenth-rated medium for instruction. Also, there are five media (television, video, *realia*, films, and *risalah*) that made it to the top ten media in both lists.

When asked if they considered communication media for instruction to be different from communication media for information dissemination, 72.63 % of the respondents said they did, 20.00 % said there was no difference between the two groups, and 7.37 % were uncertain. This acknowledgment by the respondents is clearly shown by several media listed in Table 1 that are rated differently for instruction and information dissemination. In addition, when asked whether they used different treatments when producing communication media for instruction versus information dissemination, 75.79 % said they did, 20.0 % said no, and 4.21 % were uncertain.

To verify the respondents' opinions about the differences between media for instruction and media for information dissemination, a paired T-test procedure was performed on all twenty-nine listed media. Basically this procedure compares the means of a medium that respondents regarded as appropriate for instruction with the

mean of the same medium that respondents regarded appropriate for information dissemination. Results of Paired T-test revealed 19 media that showed statistically significance difference at $p < .05$, and 10 media showed no statistical difference at $p = .05$. Among the media that showed significance difference at $p < .05$ included *realia*, television, radio, newspapers, *risalah*, posters, agents, flipcharts, and pamphlets. Among the media that showed no statistical difference at $p = .05$ included video, films, slide-tape series, photographs, and models.

Thus, it can be said that respondents of this study believe communication media for instruction are somehow different from those media intended for information or knowledge dissemination. This group of respondents are also more likely to note a difference throughout the media production process.

To further comprehend respondents' perceptions about the suitability of particular media for knowledge transfer, the means of media regarded as appropriate for instruction and media appropriate for information dissemination were averaged. As a result, another list of media rating was developed. The list of top ten media is shown in Table 2. Since the list consists of media for instruction and media for information dissemination, this new media rating is simply called "media appropriate for knowledge transfer."

Table 2. Communication media rated according to their appropriateness for knowledge transfer

Type of medium	Averaged mean (N = 95)
Realia	5.98
Video	5.91
Television	5.89
Films	5.61
Slides	5.43
Newspapers	5.38
Exhibitions	5.36
Risalah	5.35
Slide-tape series	5.31
Radio	5.30

This new media rating clearly indicates, according to the media developers, that *realia* (or the real object), is the most suitable medium for either instruction or knowledge dissemination. The next four media suitable for instruction or information dissemination are also those best able to portray reality. Two print media, one audio medium, and a combination of media (exhibition) rounded out the ten media most suitable for knowledge transfer. This new list of media ratings can be considered as a principle finding of this research because it was developed according to perceptions of the media developers themselves.

In order to ensure that the ratings of media for knowledge transfer by the respondents are "real," a coefficient of concordance (Kendall w) was computed. A w of .1132 was found at $p < .05$, Chi Square = 85.6026, and d. f. = 9. Thus, there is a

significance difference in the way the respondents rated the media for knowledge transfer.

It should be noted that not all media considered by the respondents to be appropriate for knowledge transfer are available within their agencies. For example, the agencies did not own television and radio stations, and they did not publish newspapers. However, the agencies usually take part or contribute in the production of television and radio programs that are intended for farmers. Also, it is a common practice for producers of television and radio programs to consult the agencies for program contents. On the other hand, facilities are available for production of realia, video, slides, and slide-tape series, to mount exhibitions, and publish *risalah*..

Armed with knowledge of the types of communication media the respondents consider appropriate for knowledge transfer, we will examine the elements or factors they consider important when selecting appropriate medium or combination of media for particular purposes.

Factors considered in selecting media. It is useful to note at this point that the present study assumes that the respondents would base their choice of a particular medium or combination of media for instruction or knowledge dissemination on the potential and/or proven effectiveness of certain criteria, according to certain procedures, and after considering a number of factors or elements. The questionnaire listed twenty-five possible elements that respondents could consider when making a media selection, and they were asked to rate the importance of the listed elements, on a scale of 1 (not at all important) to 7 (most or very important).

It was found that, overall, fifty-three respondents (55.79 %) rated "purpose of communication" with a scale of "7" which means that the respondents consider it to be the most important element in selecting media. This was followed by "audience characteristics," chosen by 47.37 % of the respondents who also gave a scale of "7." However, when mean values are listed in order to better present the ratings of

selection elements, "audience characteristics" had a higher value than "purpose of communication. Table 3 shows the ratings of the top 15 selection elements considered important by the respondents.

Table 3. Elements rated by importance for media selection by the respondents

Selection element	Mean
Audience charac.	6.29
Purpose of communic.	6.24
Audience media pref.	6.00
Time to complete med.	5.98
'User' of media	5.86
Units capabilities	5.83
Visual illustration	5.79
Time to dissemi. info.	5.79
Availability of equip.	5.77
Location of media use	5.72
Printed texts	5.71
Own capabilities	5.68
Audio need	5.67
Ease of media usage	5.67
Media selection guide	5.59

As shown in Table 3, the respondents indicated that, based on the mean values, "audience characteristics," "purpose of communication," "audience media preference," "time to complete media production" and "user of media" were top-five elements to be considered when selecting media.

To further explain the importance of the 25 listed elements in media selection, principal components analysis was performed. This analysis yielded seven factors with eiginvalues of more than 1.0, (using Keiser, (1960) minimum eiginvalue) and cumulative percentage of about 70 percent. The range of communality for the seven factors was between .4489 and .8517, and only 35 percent of the residuals are less than .05. Thus, it appears that a 7 factors solution best fits the model for the 25 selection elements.

The first factor consisted of four items:"objective of communication," "audience characteristics," "user of media," and "audience media preferences," with loadings ranging from .5334 to .8606. This group of selection elements is similar to the component of communication (theory) factor mentioned earlier. The second factor consisted of three items:"full color," "ease of media production," and "ease of updating content" with loadings ranging from .6511 to .7594. The third factor consisted of the items:"audio need," "visual movement," "media flexibility,' and "media portability" with loadings ranging from .6226 to .7628. The fourth factor included of "location of media use," "time to disseminate information," media durability," and "ease of media usage" with loadings ranging from .4765 to .7532. The items:"own capabilities," "colleague capabilities," and "units capabilities" were found in the fifth factor, with loadings ranging from .6872 to .8149. The sixth factor consisted of "time given to complete media production," "printed texts," and "visual illustration" with loadings ranging from .5797 to .8232. Finally, the seventh factor consisted of "production cost," "instruction from above," "availability of equipment," and "media selection guidelines" with loadings ranging from .4560 to .8083.

After we have known the media respondents consider to be appropriate for instruction and information dissemination or campaign and the kinds of selection factors that respondents considered important when deciding on the most appropriate media for knowledge transfer activity, perhaps now we have a better understanding on how the communication unit staff of the agricultural extension agencies in

Malaysia select and make decision on the most suitable media for their knowledge transfer activities. Can the media selection experience originated from this study be shared by other development agencies in other parts of the world? Obviously, the potential is there.

Discussion and Conclusion

It should be stressed that the main purpose of selecting communication media was to best facilitate the transfer of information or knowledge from a source to intended receivers. Theoretically, using suitable media that will carry appropriate content (information, message, or knowledge) can help the process in at least two ways: improve both reach and access and facilitate teaching-learning activities. However, methodical media selection has become necessary because information agencies can only disseminate information through media they can produce or get access to; and, on the other end, many potential receivers of information do not own or have access to certain media, resulting in the limitations on their access to information.

The types of media the staff-members of the communication units considered right for knowledge transfer revealed a striking balance between the media that they considered to be highly appropriate for instruction and the media they considered to be highly appropriate for information dissemination. According to them, methods of knowledge transfer that employ actual objects in face-to-face communication are best. However, if this is not possible then media that convey reality with a high degree of fidelity are highly recommended.

Respondents' choice of *realia* as the most appropriate medium for knowledge transfer is highly informed—*realia* has always been ideal for any kind of teaching-learning, as it invokes all human senses. Furthermore, in agriculture, use of real-life examples is highly recommended because farmers can relate to them directly, and usually the real things are particularly convincing.

Respondents also considered video, television, and films to be appropriate for knowledge transfer. These media visually present real actions or motions of subjects in conjunction with audio, a portrayal of reality that is as close to reality as communication technology can get. Even though radio was rated tenth as a medium for knowledge transfer, it had been rated second by respondents as appropriate for information dissemination. Radio was rated slightly lower in this case by the respondents, perhaps due to its inability to present visual information. Nevertheless, it should be noted that radio has always been popular in project work in many developing countries.

Thus, it can be concluded that the respondents consider those communication media which can present reality with the greatest fidelity to be the most appropriate media for knowledge transfer. If it is not possible to use the kind of media just mentioned, then a media mix is preferred. In case a media mix is also not possible, then an audio medium is suggested.

With regard to selection elements that respondents' consider to be important when making media decisions, the top-fifteen elements (Table 3) can be catogerized into three groups. The first group can be labeled as "theoretical" comprising the elements of audience characteristics, purpose of communication, audience media preference, user of media (extension agents or instructors) and media selection guide. The second group can be labeled as "practical or logistic" consisting the elements of time to complete media, unit's capabilities, time to disseminate information, availability of equipment, location of media use, own capabilities, and ease of media usage. The remaining elements, visual illustration, printed texts, and audio need, can be grouped into "media attribute."

From these groupings we can see that the respondents consider theoretical (five) and practical or logistic (seven) elements to be very important when deciding on the most appropriate media for knowledge transfer activities, followed by media

attributes (three). Even though there are five theretical elements and seven practical elements, the respondents place more theoretical elements higher in their ratings.

Thus, it can be concluded that the respondents regarded the theoretical elements to be the most important in deciding which medium or media combination appropriate for a particular knowledge transfer activity, followed in order by the elements of practical or logistic, and media attributes. After all, in the final analysis, media are vehicles that facilitate the transfer of information from a source to an audience. However, communication media must be selected and developed carefully because without proper planning and consideration their use in development work could actually bring about negative outcomes.

As such, as noted by the respondents of this study, it is very important to treat a medium for instruction differently from a medium intended for information campaign.

REFERENCES

Academy for Educational Development (AED), (1985). Beyond the Flipchart: Three decades of development communication. Washington, D. C. Clearinghouse on Development Communication, AED.

Adhikarya, R. and Middleton, J. (1979). Communication planning at the institutional level: A selected annotated bibliography. Honolulu: East-West Communication Institute, East-West Center.

Adhikarya, R. and Posamentier, H. (1987). Motivating farmers for action: How strategic multi-media campaigns can help. Eschborn: Deutsche Gesellschaftfur Technishe Zusammenarbeit (GTZ). fur Technishe Zusammenarbeit (GTZ).

Anderson, R. H.. (1983). Selecting and developing media for instruction (2nd ed.). New York: Van Nostrand Reinhold Company.

Beltran, L. R. (1974). Rural development and social communication: Relationships and strategies. In R. H. Crawford and W. B. Ward (Eds.), Communication strategies for rural development: Proceedings of the Cornell-CIAT international symposium (pp. 11-27). Ithaca, New York: New York College of Agriculture and Life Sciences.

Blalock, H. M., Jr. (1979). Social statistics (rev. 2nd. ed.). San Francisco: McGraw-Hill Book Company.

Chaffee, S. H. (1991). Communication concepts 1: Explication. Newbury Park CA: Sage.

Gagne, R. M. and Briggs, L. J. (1979). Principles of instructional design (2nd. ed.). New York: Holt, Rinehart and Winston.

Hornik, R. C. (1988). Development communication: Information, Agriculture, and Nutrition in the Third World. New York: Longman.

Kaiser, H. F. (1960). The application of electronic computers to factor analysis. Education and Psychological Measurement, 20, 141-151.

Kearl, B. E. (1978). Communication for agricultural development. In W. Schramm and D. Lerner (Eds.), Communication and change: The last ten years-and the next (pp. 163-183). Honolulu: The University Press of Hawaii.

Kemp, J. E. and Smellie, D. C. (1989). Planning, producing, and using instructional media (6th. ed.). New York: Harper & Row, Publishers.

Mayo, J. K. (1989). Unkept promises: Educational broadcasting in the Third World. Paper presented at the International Communication Association annual Convention.

Mody, B. (1991). Designing messages for development communication: An audience participation-based approach. Newbury Park: Sage.

Pounds, D. (1985). Putting extension information where people will find it. Journal of Extension, 23(Winter), 20-23.

Reiser, R. A. and Gagne, R. M. (1983). Selecting media for instruction. Englewood Cliff, New Jersey: Educational Technology Publications.

Reynolds, A. and Anderson, R. H. (1992). Selecting and developing media for instruction (3rd. ed.). New York: Van Nostrand Reinhold.

Romiszowski, A. J. (1988). The selection and use of instructional media (2nd ed.). New York: Nichols Publishing.

Rogers, E. M. and Storey, J. D. (1987). Communication campaigns. In C. R. Berger and S. H. Chaffee (Eds.), Handbook of communication science (pp. 817-846). Beverly Hills: Sage Publications.

Rosser, M. (1987). Communication and agricultural development. Media in Education and Development, 20(2), 74-79.

Schramm, W. L. (1977). Big media small media: Tools and technologies for instruction. Beverly Hills: Sage Publications.

Watts L. H. and Claar, J. B. (1983). Knowledge transfer for agricultural development: History-limitations-importance. In J. B. Claar and L. H. Watts (Eds.). Knowledge transfer in developing countries: Status, constraints, outlook. Proceedings of a Conference on International Extension at Steamboat Springs, Colorado (pp. 3-13). Urbana-Champaign, IL: INTERPAKS.